federal register

WEDNESDAY, MAY 4, 1977

PART II

CONSUMER PRODUCT SAFETY COMMISSION

■

MATCHBOOKS

Establishment of Safety Standard

Title 16—Commercial Practices

CHAPTER II—CONSUMER PRODUCT SAFETY COMMISSION

SUBCHAPTER B—CONSUMER PRODUCT SAFETY ACT REGULATIONS

PART 1202—SAFETY STANDARD FOR MATCHBOOKS

Establishment of Standard

AGENCY: Consumer Product Safety Commission.

ACTION: Final Regulation.

SUMMARY: The purpose of this document is for the Consumer Product Safety Commission (Commission) to issue a consumer product safety standard for matchbooks. The requirements are designed to reduce or eliminate certain unreasonable risks of injury from accidents associated with matchbooks.

EFFECTIVE DATE: May 4, 1978.

ADDRESS: Copies of all documents relating to the development of this standard are available through the Office of the Secretary, Consumer Product Safety Commission, 1118 18th Street NW., Washington, D.C. 20207, 202–634–7700.

FOR FURTHER INFORMATION CONTACT:

James M. McNamara, Office of Standards Coordination and Appraisal, 5401 Westbard Avenue, Bethesda, Maryland 20207. (301–492–6470).

SUPPLEMENTARY INFORMATION: In the FEDERAL REGISTER of September 4, 1974 (39 FR 32050), the Commission began a proceeding under section 7 of the Consumer Product Safety Act (15 U.S.C. 2056) (Act) for the development of a consumer product safety standard applicable to matchbooks. On October 24, 1974, the Commission accepted the offer of the American Society for Testing and Materials (ASTM) to develop a recommended standard. The Commission's acceptance of the offer from ASTM was formalized on December 30, 1974, and was announced in the FEDERAL REGISTER of January 7, 1975 (40 FR 1298). On January 31, 1975, ASTM submitted to the Commission a recommended standard.

Section 7(f) of the Act (prior to its amendment on May 11, 1976) provided that within 210 days after the publication in the FEDERAL REGISTER of a notice of proceeding to develop a consumer product safety standard (here published September 4, 1974), the Commission must either publish a proposed standard or withdraw the notice of proceeding. The Commission could extend the 210-day period for good cause by publishing a notice of extension in the FEDERAL REGISTER. Several extensions were taken for good cause.

On April 1, 1976, the Commission proposed for comment in the FEDERAL REGISTER (41 FR 14112) a consumer product safety standard for matchbooks. The standard as proposed was similar to the recommended standard submitted by ASTM with the exception of the addition of child-resistant requirements for the matchbook cover as developed by the Commission's staff.

The background of the development of the proposed standard and its consideration by the Commission are more fully detailed in the preamble to the proposal of April 1, 1976 (41 FR 14112). A discussion of the Commission's preliminary determination that there are unreasonable risks of injury associated with matchbooks and a reference to the technical rationale which formed the basis for the Commission's proposal of the standard are also found in that preamble.

The Commission received approximately 226 written comments on the proposed standard and, additionally, interested parties made oral presentations concerning the proposal on May 20–21, 1976. On September 14, 1976, following a preliminary review and assessment by the Commission of the written comments and the oral presentations, the Commission announced in the FEDERAL REGISTER that it had decided to extend from July 31, 1976 until May 1, 1977 the period in which the Commission must publish a final standard. The Commission also announced its decision not to include in the final standard the provisions of the proposal requiring a child-resistant matchbook cover, requiring identification on the matchbook cover of the manufacturer by zip cope, and restricting the use of coupon advertising. The Commission also announced that it was considering extending the effective date of the final standard for those provisions on limited burn time/distance. The basis for these decisions is discussed below.

Before proceeding with this discussion it should be noted that the terms "matchbook" and "bookmatch" both appear throughout but are not interchangeable. The term "bookmatch" refers to the single ignition device that is contained within a matchbook. The term "matchbook" refers to the entire article.

RESPONSE TO PROPOSAL OF APRIL 1, 1976

As mentioned above, the Commission's matchbook proposal of April 1, 1976 elicited 231 written comments and several oral presentations of comments from a broad spectrum of interested parties. The parties include: individual consumers; consumer groups; matchbook manufacturers; paperboard suppliers; a manufacturer of matchbook machinery; inventors submitting alternative designs or methods, patented devices and the like; a Federal agency; private health and safety specialists; employees of matchbook manufacturers; and, an official of a labor union. The principal issues raised by the comments and the Commission's decisions thereon are set forth below.

I. SCOPE

Part 1202, as proposed, was intended to prescribe safety requirements for the performance of all matchbooks manufactured in or imported into the U.S. after the effective date. By definition, "matchbook" did not include wooden matches packaged in boxes, survival matches, or "strike anywhere" wooden kitchen matches.

1. A large number of commenters question the Commission's action in proposing this Standard for matchbooks without also proposing regulation of other related and "more hazardous products" such as wooden matches and disposable butane lighters.

In issuing this standard the Commission is in no way trying to minimize the hazards associated with either wooden matches or lighters, including the disposable butane type. The Commission's data are inconclusive as to whether wooden matches are more hazardous than bookmatches. Further, the latest estimated number of injuries related to lighters which were treated in hospital emergency rooms in the U.S. is significantly lower than that related to all matches over the same period. (For the reasons discussed below in number 3 of the risk of injury section the Commission is unable to break down its estimate of match-related injuries by wooden and bookmatches, and therefore a direct comparison between the estimated number of accidents involving disposable butane lighters and bookmatches is not possible.) The Commission will continue to monitor injury data on these and all other consumer products under its jurisdiction and, when or if it is deemed appropriate, exercise its administrative discretion in taking the necessary corrective action.

2. One commentor argues that by regulating matchbooks and not also regulating wood matches the Commission is denying matchbook manufacturers equal protection of the law as guaranteed by the Fifth and Fourteenth Amendments of the U.S. Constitution. It is further argued that since wood matches present "at least as great a risk to the public as bookmatches, the Commission's action below is "manifestly unreasonable."

The Commission finds no merit in this argument. The Commission was created by Congress to, among other things, protect the public against unreasonable risks of injury associated with consumer products. Implicit in this power is the power of the Commission to exercise its best discretion in ordering its own priorities. It is a practical impossibility for the Commission to simultaneously promulgate multiple safety standards so as to eliminate all unreasonable risks of injury associated with consumer products. Absent a showing that the Commission acted "arbitrarily and capriciously" and thereby abused its discretionary power to order priorities, this argument must be rejected. In this instance the Commission's decision to deal at this time with the risks associated with matchbooks is clearly a proper exercise of discretion.

3. Several commentors express concern about the adverse economic effects which they claim this standard will have by decreasing the functionality and utility of matchbooks and thereby greatly increasing the cost to the consumer. The results of this, they claim, will be an increased consumer demand for substitute

light sources such as wooden matches and inexpensive, disposable butane lighters, many of which are imported, to the competitive disadvantage and detriment of the domestic paper matchbook industry and its many employees.

These comments correctly point out that potentially adverse economic effects may result if directly competing products not subject to the proposed standard are substituted for the products which are subject to that standard. Substitution effects, however, are likely to be significant only if there are substantial changes in the relative prices of matchbooks vis-a-vis prices of the competing products, or if there are substantial decreases in the acceptability or utility of matchbooks. Potentially substantial changes of these types may have occurred if the final standard had included the more costly provisions for a child-resistant cover and limited burn time/distance. However, since these provisions which appeared in the proposal, are not included in the final standard issued below, it is no longer likely that any significant substitution effects will occur. In fact, the standard, as issued, may increase acceptability and utility because of the lessened risk of injury associated with these matchbooks.

II. RISK OF INJURY

In the preamble to its proposal of Part 1202 on April 1, 1976, the Commission estimated that during fiscal year 1975, approximately 9,500 people throughout the U.S. required hospital emergency room treatment for match-related injuries. This estimate was based on 368 emergency room reports from 119 statistically selected hospitals transmitting data to the Commission's National Electronic Injury Surveillance System (NEISS). Additional data from the Commission's Death Certificate Program, the National Fire Protection Association (NFPA), and the Flammable Fabrics Accident Case and Testing System (FFACTS) further expanded the data from which the Commission identified the nature of the risk of injury associated with bookmatches.

On the basis of these data the Commission proposed a standard for matchbooks which was designed to reduce or eliminate the following risks of death or serious injury:

1. Burn injuries sustained by children and others, including mentally or physically impaired persons, who play with or otherwise improperly use matchbooks.

2. Burn injuries sustained by persons who use bookmatches that spark or have delayed ignition.

3. Eye injuries sustained by persons who use bookmatches that fragment and cause particles from such matches to lodge in a person's eye.

4. Burn injuries sustained by persons who use bookmatches that, when struck, ignite the remaining matches in the matchbook.

5. Burn injuries sustained by persons, including children, using bookmatches that after ignition have dropped on exposed parts of the body or that have been dropped on and have ignited clothing because such bookmatches have failed to extinguish in time to avoid such injuries.[1]

6. Burn injuries sustained by persons from fires that have resulted from unexpected ignition of bookmatches with no deliberate action by the user.

7. Burn injuries that have been sustained by persons from fires that have been set by the afterglow of what appears to be extinguished bookmatches.

The Commission received numerous comments questioning reliance on the NEISS data as a determinant of risk of injury and other comments related to the application of the NEISS in the regulatory development process.

1. One comment received from a U.S. Senator stated the opinion that the NEISS lacks clarity and specificity and therefore its usefulness in the regulatory development process is questionable. Specifically, he says that because of the lack of specificity "it is difficult to conclude that all of the matchbook standards being considered will reduce burn accidents." He suggests modifying the NEISS data gathering so as to better pinpoint the element or elements of a product which caused the problem.

The Commission is continually working to upgrade and improve the data gathering capabilities of the NEISS. However, the NEISS is the only statistical data collection system available designed to gather product-related injury data from a probability sample of hospital emergency rooms throughout the contiguous United States. This system is designed to measure the incidence of accidental injuries seen in hospital emergency rooms. The data received from the hospitals do not include etiological information since it is not feasible to expect an injured victim awaiting emergency treatment to supply answers to the types of complex questions that are necessary to understand the causal factors leading to the injury.

The statistics derived through NEISS provide a measure of the magnitude of the hospital emergency room treated injury problem associated with specific products which are then used to set priorities and provide important clues for further investigation. However, no action is ever taken by the Commission based solely on the information generated through this emergency room reporting system. To determine the causal factors which are related to the injury, trained investigators selectively interview injury victims and witnesses and complete an in-depth investigation report. This report contains detailed information about the product involved and its role in the accident, the accident sequence, and the characteristics of the victim and his or her environment. Other available data sources (such as Death Certificates, NFPA data, FFACTS, etc.) are used to supplement the NEISS and the in-depth investigative reports.

Data on match-related injuries occurring in the United States have been compiled using the best data sources available at this time. Each of these data sources was designed to meet specific needs but none was designed specifically for the collection of information on match-related injuries. For these reasons, none of the data sources alone adequately or accurately measures the full magnitude of the match-related injuries occurring in this country. However, collectively, the data sources presented in the Hazard Analysis of Match-Related Injuries (on file with the Commission) do typify the match characteristics and experiences known to exist.

2. Some commentors question the significance of the estimated 9,500 match-related injuries for FY 1975 cited by the Commission when compared with the number of matches distributed and/or used annually. According to several of these commentors, using the above comparison the "risk of injury in using a match is one in fifty million."

Another group of commentors make a related comment and compare the 9,500 match-related injury figure to the population of the U.S. They state that match-related injuries requiring hospital treatment occur to "less than one half of one hundredth of 1 percent of our population!!"

Match-related injuries are known to be underrepresented in the NEISS data because the NEISS estimated number of injuries is only an estimate of the number of people in the United States who for a year's time received hospital emergency room treatment primarily for injuries received from direct contact with a match. This estimate does not include match-related injuries treated by private physicians, specialized burn facilities, or clinics and hospitals which do not have an emeregncy room nor does it include injuries sustained by victims who accidentally dropped a lit match on clothing or other fabric items causing serious burn injuries which required extensive medical treatment and prolonged hospitalizaton. It also does not include match-related injuries sustained in conflagrations due to the extreme difficulty the surviving victims often have in identifying the ignition source.

The NEISS estimate is further limited by the fact that coders can report only one product per injury treated in the hospital emergency room although several products may have been involved. If one of the products involved is a fabric item, then the coder is instructed to report the fabric item as the involved product to the exclusion of any other. Thus, in cases where garment or fabric ignition contributed to the victim's injuries, the injuries are "credited" to garment or fabrics rather than to the original ignition source.

By candidly setting out the limitations in its NEISS data collection system, the

[1] Because the provisions for limited burn time/distance are being deleted in the final regulation (as discussed below), this risk of injury which appeared in the proposal and was to be primarily addressed in the final regulation by those provisions, has been deleted and will not be addressed in the final standard issued below.

Commission is trying to show that its figure of 9,500 match-related injuries for FY 1975 is a minimum estimate but at the same time is an important element in fulfilling the Commission's legal responsibility to gather and present all injury data relevant to match-related injuries occurring in the U.S. It is conceded that none of the data sources used either alone or collectively measure the true magnitude of the match-related injuries occurring in this country annually. Collectively, however, they best identify the many factors which combine to contribute to match-related injuries.

In conclusion, it should also be noted that the Commission totally disagrees with the notion that it is required to have actual injury data associated with a product (take a body count), before deciding to move to regulate a consumer product. Action is often taken on the basis of the potential for injury posed by a particular consumer product.

3. Some commentors expressed concern over the fact that the NEISS product category #1704 for "Matches" (and thus the estimated number of injuries), includes both wooden and bookmatches. They believe that the estimate unfairly reflects the estimated number of injuries while the regulation only addresses bookmatches.

The commentors are rightfully concerned over the fact that the NEISS product code for "Matches" does not differentiate between wooden and bookmatches. This shortcoming is inherent within the reporting system because: (a) the contact with the victim and the initial report is made by hospital emergency room staff whose primary mission is, and should be, to efficiently and expeditiously treat the victim/patient and not to fill out overly detailed reports, and; (b) the victim/patient is often unable or in no condition to provide the necessary details of the accident. The amount of detailed information in the surveillance data concerning the product will, by design, always be limited by these factors. However, it is hoped that the problem can be somewhat rectified by utilizing the NEISS data in concert with the detailed description of the product and the accident scenario contained in the in-depth investigation which often follow.

The hazard analysis of injuries associated with a product includes all components and functions of the product and all variations or types of the product. Therefore, all types of matches were considered in the hazard analysis. Generally, it was possible to distinguish the various types of matches involved in the in-depth investigation reports.

4. Certain commentors criticized the Commission's in-depth investigations for not being statistically representative of the match-related injuries. One commentor characterized them as comprised of "haphazardly chosen (and unduly severe) incidents."

Although criticizing the in-depths as not being statistically representative of match-related injuries, some of these commentors then proceeded to treat them as a statistical sample and projected the proportions of different types of matches and match injuries found in the in-depths to the NEISS estimate of match-related injuries. Using this erroneous approach, they were then able to conclude that the "low" NEISS estimate could be reduced even further.

The choice of accidents that will be the subject of an in-depth investigation is determined on a case-by-case basis and is further based on injury severity and on the Commission's needs and priorities. In-depth investigation reports used in the Commission's hazard analysis of match-related injuries are not intended nor represented to be a statistical sample of the data collection procedures employed by CPSC. Only the NEISS gathers product-related injury data from a statistical sample. As discussed above, this system is designed to measure accidental, emergency room treated, injuries which involve consumer products. The data received from the hospitals do not include etiological information since it is not feasible to expect an injury victim awaiting emergency treatment to supply answers to the complex questions that are required to understand the causal factors leading to the injury.

To determine these causal factors, follow-up in-depth investigations are conducted. Information is obtained about the brand and model of product(s) involved, the role of the product(s) in the accident, the accident sequence, and characteristics of the victim and his or her environment which related to the accident. While only some injuries reported through NEISS are investigated, the Commission also does in-depth investigations of reports of injuries from other sources, including consumer complaints, newspaper accounts, and information from other government agencies. In general, products which appear to be involved frequently in injuries or to cause severe injuries, are given priority for in-depth investigation. Although the in-depth investigations are used to identify hazard patterns, they cannot be and are not used to make projections to the NEISS Surveillance estimate because they are not stastistically representative.

5. Several commentors state that some types of match-related injuries have been assigned an unreasonably high severity rating on the Severity Index and as a result have presented a seriously distorted picture of the risks of matchbooks in relation to other consumer products.

The Severity Index is a management tool which was devised for assessing the severity of product-related injuries reported through NEISS. This Index, which is based on medical opinion, combines the information on injury diagnosis, body parts affected, and disposition of victim to establish a severity ranking for the products reported through NEISS.

The Index is currently comprised of seven categories ranging in severity from minor injuries (Category 1) to injuries resulting in death (Category 7). Each injury, as described by a combination of diagnosis, body part affected, and disposition, is categorized by the Commission for presumptive severity. Category 6 is used for the most severe combination short of death. If the victim is hospitalized, the category number normally assigned is raised one number.

Each category has a crude severity number, arbitrarily selected, but mathematically derived, by increasing each successive numerical level by the geometric proportions of the preceding level. As an example, for category 1, the severity number is 10 and for Category 7 the number is 2516. The mean severity for a given product is calculated by summing the product of the number of injuries in each severity category and the severity value assigned to each category and dividing the summation by the total number of injuries.

For Fiscal Year 1975, the mean severity of all NEISS reported match-related injuries was 153. In terms of the seven severity categories in the Severity Index, match-related injuries fell between Category 5 and Category 6. The two largest severity categories for these match-related injuries were Categories 2 and 6 and involved eye injuries primarily. There were slightly more injuries assigned to Category 6 than Category 2 by coders in the NEISS hospitals. Eye injuries assigned to Category 2 were reported on the hospital emergency room records as being either contusion/abrasion or dermatitis. For comparison, other types of injuries which fall into Category 2 include dislocation of a limb; burn to an ear, finger or toe; and laceration to a limb or ear. Eye injuries assigned to Category 6 were reported as being burns. Other types of injuries which fall into Category 6 include burns to 25 percent or more of the body surface area and limb amputation.

Eye injuries involving burns are ranked high on the Severity Index due to the potential for permanent damage and disability. As stated above, the Severity Index is a management tool which, like the Hazard Index described below, is used in setting Commission priorities. However, it was not designed, nor is it ever used, to determine whether or not a product was at fault.

The Commission wishes to stress that a product's ranking on the Severity Index is helpful as a management tool in setting priorities and providing important areas in need of further investigation, but is never the sole basis for regulatory action by the Commission.

6. Citing what they characterized as the relatively "low" ranking of matches in the Hazard Index, several commentors question the need for matchbook regulation at this time.

The Hazard Index is a management tool in which the frequency of product-related injuries and their severity are aggregated to determine the ranking of the product on the Index.

In Fiscal Year 1975, matches ranked 44 in a list of some 367 product categories. This would put matches in the top 13 percent on the Index. This is

hardly a "low" ranking as was the claim of these commentors.

Finally, as in the case of the Severity Index, the Commission points out that the Hazard Index is never the sole basis for regulatory action.

7. Certain commentors made the assumption that an overly large proportion of the NEISS estimated 9,500 match-related injuries involved infants, toddlers, and children. Based on this assumption they questioned whether it was fair for the Commission to regulate the safety of matches without considering the problem of parental negligence and misuse.

The Commission disagrees with the contention that an overly large proportion of infants, toddlers, and children were involved in the 9,500 estimate. Of the estimated 9,500 people throughout the contiguous United States who sought hospital emergency room treatment for match-related injuries, the majority are estimated to be youths and adults in the 13–45 age range who were injured much more frequently than would be expected based on their representation in the U.S. population. In comparison, it is estimated that infants, toddlers, and children (ages 0–12 years) are not injured nearly as frequently as would be expected based on their representation in the population.

The majority of the injuries sustained by victims seeking hospital emergency room treatment were reported as thermal burns, affecting primarily the eye. It is assumed, based on surveillance data and the in-depth investigations, that most of these injuries occurred as the result of a defective, lit matchhead breaking off or fragmenting when struck and subsequently hitting the victim in the eye. It is unlikely that these could be attributed to misuse or negligence by the children or their parents.

8. In reviewing the NEISS sample of match-related injuries over a three-year period, several commentors concluded that those injuries have been steadily decreasing as evidenced by the decline from 442 cases in 1973 to 368 cases in 1975.

In evaluating the Commission injury data from 1973–1975, the commentors were using the NEISS sample instead of the NEISS estimate. The NEISS sample or "actual number" of match-related injuries for each year is not meaningful. The 119 hospitals participating in NEISS represent a probability sample of all hospital emergency rooms within the contiguous United States. An inflation factor or weight is assigned to each participating hospital and is based on the inverse of the probability that the hospital would be selected for the sample. Injuries reported in this sample are inflated to obtain a meaningful estimate of all product-related injuries treated only in hospital emergency rooms within the contiguous United States.

Neither the sample nor the estimate derived from the sample can be compared from year to year due primarily to reporting fluctuations and sampling errors. A standard error is calculated for each estimate. A standard error is a measure of sampling variability, that is, the variations that might occur by chance because only a sample of hospital emergency rooms in the U.S. is surveyed. The chances are about 68 out of 100 that an estimate from the samples will differ from a survey of all hospitals by less than the standard error. The chances are 95 out of 100 that the differences would be less than twice the standard error. When the standard error for these estimates was considered, no significant change has been noted by the Commission in the estimated number of match-related injuries derived from the NEISS during the time the system has been in operation.

9. Some commentors question the seriousness of those match-related eye injuries resulting from fragmenting or broken matchheads where the victims are treated and released after initial emergency room treatment. In their view these injuries are minor.

The disposition "treated and released" does not imply that further medical attention was unnecessary nor is it in any way indicative of the seriousness of the injury. Due to the potential for permanent damage or disability, injuries affecting the eyes may not require hospitalization but may frequently necessitate return visits to the hospital as an outpatient, or to a physician or clinic.

Recently, the Commission learned of an incident relevant to this discussion. The incident involved a person who was struck in the eye by a fragment of a matchhead from a match being used to light a cigarette. The victim was treated by a physician in his office (thereby not being recorded in the NEISS) for a corneal abrasion which caused a pin-head size hole in the cornea. The victim was required to wear a patch and was under the physician's care for three days during which time she suffered extreme pain and discomfort, both physical and mental.

The injury in this instance did not permanently impair the victim's vision. Even if the abrasion occurred in the more critical portion of the eye where the line of vision would have been affected it is doubtful whether this type of injury would have necessitated immediate hospitalization, and the patient would likely have been "treated and released."

10. Numerous commentors state that the NEISS estimate of 9,500 match-related injuries resulted primarily from the ignition of other intermediate combustible substances and not as a direct result of the ignition source.

Of the estimated 9,500 match-related injuries treated in hospital emergency rooms throughout the U.S., most did not involve ignition of intermediate combustibles or conflagrations. It is estimated that approximately 6,346 of these injuries were from burns. It is further estimated that approximately 3,513 of these burn injuries were localized thermal burns affecting the eye and not the extensive types which are commonly associated with fabric ignition (the most common intermediate combustibles). As discussed in number 2 above, NEISS is designed for the reporting of only one product per injury. If the injury involves ignition of a combustible item, then match coders are instructed to report the injury under the code for the particular combustible item.

The Commission is studying the problem of both ignition sources and intermediate combustibles which relate to burn injuries. Because of the severity of burn injuries and the complexity of the burn problem, efforts to reduce the incidence of burn injuries require a multi-faceted approach with no single resolution expected.

11. Our Commentor objects to the Commission's use of the NEISS estimate because the data include injuries such as ingestions, lacerations, and chemical burns which are not being addressed by the proposed standard.

An estimate based on NEISS data is a measure of the number of all emergency room treated injuries associated with a certain product. The estimate is not intended or used to imply that a product is at fault in every injury, but merely that the product was involved.

The Commission reiterates that the estimates derived through NEISS provide a measure of the magnitude of a problem associated with specific products which are then used as one of several management tools by the Commission to set priorities and provide important clues for further investigation. However, these estimates are never the sole basis for regulatory action taken by the Commission and therefore, the concerns expressed by this commentor are not relevant.

12. Another commentor suggests that the proposed matchbook standard be expanded to address what it claims is a hazard to small children from the ingestion of bookmatches.

The Commission has considered this comment and finds no basis for any such action. According to the "Handbook on Poisoning," by Robert H. Driesback, the ingestion of matches poses no known danger to small children from toxicity or poisoning. The Commission has no other evidence to the contrary.

III. EFFECTIVE DATE

Part 1202, as proposed, set the effective date to be 365 days after publication of the final standard in the FEDERAL REGISTER.

Almost all of the comments received concerning the proposed effective date dealt with the problems of complying with the child-resistant cover and limited burn time/distance provisions contained in the proposed standard within the time proposed. Since those provisions have been dropped from the final standard as issued below, it is the Commission's view that no response to those comments is necessary.

Of the remaining comments on the effective date received by the Commission, one group of commentors asked for a longer lead time because of the reverse friction provision, and others because of

the uncertainty of the presently unproposed certification rule under section 14 of the Act.

1. One commentor notes that, although converting to reverse friction requires only simple mechanical revisions on printing, scoring, and slitting machines, remaking all art designs and printing plates to comply with the requirement for reverse friction, proposed § 1202.5(a) will cost the commentor or his customers an estimated $15,000 and take approximately 24 months to complete. He also contends that split-shipment orders already produced for regularly scheduled shipment to customers would have to be scrapped and re-run at a cost additional to the estimated conversion costs. He claims that a 365 day effective date is not in the public interest and urges the Commission to allow a period of from 2 to 3 years within which to convert to reverse friction.

Other commentors state that any economic burden of conversion to reverse friction can be lessened if an effective date for this requirement is set to coincide with the average contract duration of about two years.

Well over two years ago, the manufacturers of matchbooks undertook a voluntary effort to convert all of their accounts and all matchbook production to reverse friction. According to the Commission's latest information, some companies have completed the conversion while other companies have converted a majority of their accounts and are approaching complete conversion. One of the methods employed by these companies to reduce the costs of conversion has been to insist on reverse friction in contracts at a time coincident with art work or design changes otherwise necessitating printing plate changes. As more time passes since the initial undertaking of the voluntary effort by the industry, there are fewer outstanding contracts specifying front friction.

Although the Commission recognizes that there may be some matchbook accounts which do not need or want art or design changes and are resistant to plate changes at the time of contract renewal, it is the Commission's view that the additional 365 days from now to the standard's effective date affords the industry ample time in which to complete conversion at minimal cost, especially in light of the voluntary conversion already undertaken. Moreover, there will be no need to scrap and re-run orders already produced and on hand for shipment at the effective date of the standard because the standard applies only to matchbooks manufactured in or imported into the United States after its effective date.

2. Another commentor states that the Commission is required to issue a certification regulation containing a sampling plan either as part of the Matchbook Standard or for comment at the same time as the standard.

The Commission disagrees with this position. Section 7(a) of the CPSA as amended by Section 6 of the Consumer Product Safety Improvements Act of 1976 expressly provides that:

> No consumer product safety standard promulgated under this section [section 7 of CPSA] shall require, incorporate, or reference any sampling plan * * *.

Thus, the Commission is expressly forbidden from including a sampling plan as part of the Matchbook Standard.

Further, section 14(a) of the Act requires that manufacturers and private labelers certify that their products conform to a consumer product safety standard, based either on a reasonable testing program or on a test of each product.

Finally, the following language of section 14(b) using the word "may" clearly gives the Commission the discretion to either issue a certification rule embodying a reasonable testing plan, with or without a sampling plan, or to issue no rule at all thereby allowing manufacturers and private labelers to develop their own plans:

> The Commission *may* by rule prescribe reasonable testing programs for consumer products which are subject to consumer product safety standards under this Act and for which a certificate is required under subsection (a) [of section 14] * * *. (emphasis added)

Thus, the Commission, though not prohibited from incorporating a sampling plan in a section 14 rule, is not required by the Act to incorporate such a plan in any reasonable testing program.

In the case of the Matchbook Standard issued below, the Commission intends, as soon as possible, to propose for public comment a certification rule without a required testing program, but including parameters to guide manufacturers in formulating such a program and, to issue a final certification rule for matchbooks before the Matchbook Standard becomes effective.

IV. TECHNICAL REQUIREMENTS

The technical requirements contained in the Commissions proposal of April 1, 1976 included requirements for a child-resistant matchbook cover, a limited burn time/distance feature, fragmentation, delayed ignition, reverse friction, afterglow, and certain other less prominent performance requirements. These requirements, and comments regarding them, are discussed in the following section.

A. *Child-resistant matchbook cover.* As proposed, those provisions of Part 1202 dealing with this subject required that, among other things, all matchbooks manufactured in or imported into the U.S. after the effective date resist an opening force of 22.2N (5.0 lbf) in any direction and be capable of being relatched by a single motion requiring less than 4.45N (1.0 lbf) of force. These provisions were proposed with the intent of reducing "the likelihood of young children gaining access to or igniting a bookmatch."

As explained above in the "Supplementary Information" section, on September 14, 1976 the Commission conducted a review and assessment of all the public comments received and of the oral presentations of May 20–21, 1976. Approximately 89 comments addressed the child-resistant cover provisions and most were in opposition. Some of the reasons given by the commentors in opposition included: the possible creation of additional safety hazards (frustrated adult users would tear off the entire child-resistant cover); the lack of economic feasibility; and, the absence of testing and research necessary to support the effectiveness of the latching-cover concept that was proposed or any other acceptable concept.

The Commission has considered all of the above, as well as the data on child-resistant covers that existed in the record prior to the proposal, and a report[2] that was prepared under contract from the Commission and included in the record by the Commission after the proposal. The Commission concludes that to require a child-resistant cover would not be in the public interest because the proposed child-resistant cover is of questionable effectiveness, would impose severe economic burdens without offsetting injury reduction, and could actually increase risks of injury if frustrated users chose to defeat the requirements.

Therefore, on the basis of all of this the final standard issued below will not include any of the provisions dealing with the child-resistant matchbook cover. Specifically, §§ 1202.4 and 1202.7 as proposed on April 1, 1976 and any other reference contained elsewhere in that proposal have been removed. The numbering of the various remaining sections has been adjusted to reflect the deletions.

B. *Limited burn time/distance provisions.* As proposed, § 1202.6(b) provides that a bookmatch "be constructed so that, when tested in accordance with § 1202.8, the flame goes out within 12.7 mm (0.5 in) down from the top of the splint and within a 15-second burn time." As noted previously, the provisions dealing with this subject were included in the Commission's proposal in order to address the risk of injury resulting from lit matches being accidentally dropped on exposed parts of the body and/or clothing, which then ignite.

Also, as part of the September 14, 1976 Commission review and assessment of all the public comment received on its proposal of April 1, 1976, the issue of whether to include limited burn time/distance in the final regulation was considered and the Commission announced that it was considering an extended effective date on these provisions.

Due to the many questions related to this problem which are still unanswered the Commission has reconsidered its former position on this issue. Some of these unanswered questions are:

1. Whether a limit on burn time/distance as a means to reduce injury is efficacious? Two manufacturers who did testing with limited burn matches concluded that a limited burn time/distance

[2] "Economic Impact of Proposed Matchbook Standard—Phase II," Dr. W. E. Riddle and A. R. Buhr, Battelle Columbus Laboratories.

match dropped relatively soon after ignition offers no substantial increase in safety over a regular bookmatch;

2. If limited burn time/distance were found to be efficacious, it has not been determined what is a reasonable burn time/distance; and

3. The technical and economic feasibility of such a requirement, including the impact that limited burn time/distance will have on the utility of the product and an assessment of the effects that a substitution of other ignition sources might have.

The Commission now believes that because these questions are unanswered it cannot include these provisions in the final standard even with an extended effective date and therefore is issuing its Matchbook Standard below without the provisions for limited burn time/distance.

C. *Definitions.* One commentor objected to the definition of "Fragments" in § 1202.3(i), as proposed. The objection was based on the small size of cold particles or fragments specified (greater than 0.76 mm (0.030 in)). The commentor believes that this size limitation is unreasonable and believes that it should be increased.

The recommended standard submitted to the Commission by the offeror provided that only fragments which either scorched or burned holes in white bond paper constituted dangerous fragments. However, the Commission's injury data showed that, in addition to the risk of thermal eye burns dealt with by the offeror's recommended standard, contusion/abrasion, dermatitis/conjunctivitis, and foreign object injuries were also frequently reported and needed to be addressed in the Standard.

In addressing the hazard from cold particles, the Commission's Office of the Medical Director (OMD) stated that the maximum size of inert particles which they would find acceptable was 1 mm (.039 in). This figure was based on information obtained from the "Merck Manual of Diagnosis and Therapy," Merck, Sharp, Dohme Research Laboratories, Rahway, New Jersey, Twelfth Edition, 1972, page 997.

The reduction in particle size from .039 to .030 inches was made by the Commission in its proposal for the following reasons:

1. As an allowance or safety factor for any particles breaking as a result of hitting the striking enclosure or being consumed in the process of burning.

2. Laboratory data indicated that .030 inch fragments can also cause scorch marks on bond paper which was one of the offeror's criteria for fragmentation.

3. Data from observations made by the Commission and NBS indicated that many persons strike matches as close as 6 inches from the face and that particles .030 inches and larger are also capable of propelling themselves in excess of 6 inches.

Although there is engineering judgment and medical opinion favoring the .030 inches fragment size, no hard medical or engineering evidence was presented or is otherwise available to support the smaller fragment size. Therefore, the Commission has changed the definition of "fragments" contained in § 1202.3(i) as proposed, to "* * * particles * * * that measure more than 1.0 mm (.039 in) in the maximum dimension * * *", as it appears below. Also, it should be noted that since the definition "[c]hild-resistant matchbook cover," which was proposed as § 1202.3(f), has been deleted, all subsequent definitions were moved up one letter in the final standard issued below.

D. *Matchbook general requirements.* Section 1202.5, as proposed, contains eight general requirements for the acceptable construction of a matchbook. Based on the deletions discussed previously, this section which appeared as § 1202.5, when proposed, will appear as § 1202.4 as issued below.

1. *Staple requirement.* Section 1202.5 (h), as proposed, restricted the use of any staples or assembly or latching devices with sharp edges or points which are exposed to the user. This requirement prompted two comments.

(a) One commentor points out that this requirement was included in the offeror's proposal because it was believed that if, during striking, the match encountered the sharp staple, the probability of fragmentation would increase. The commentor observed that, since proposed § 1202.5(g) prohibits any part of the staple from being within the friction area, the sharp staple requirement becomes superfluous in addressing fragmentations.

The offeror's proposed wording on the sharp staple requirement was that "[t]he staple shall be fully clinched and shall not have any sharp edges exposed." A staple not fully clinched or with edges exposed could cause fragmentation if struck by a match even though it was not inside or touching the friction. Therefore, the Commission believes that this requirement is necessary in addition to those prescribed in § 1202.5(g).

Th "fully clinched" phrase was not included in the Commission's proposed standard because a staple that was used as part of a child-resistant latching cover device might not function properly if fully clinched. Since the requirement for the child-resistant matchbook cover has been dropped, the requirement addressing the staple has been changed in § 1202.4(h) below as follows:

> A staple used as an assembly device shall be fully clinched so that the ends are flattened or turned into the cover.

(b) The other commenter suggested that the manufacturer should be required to insert the staple from the back of the matchbook so as to prevent loose staple points from injuring fingers contacted during the striking process.

In view of the change set out immediately above requiring staples to be fully clinched, the risk of injury to fingers will no longer be a factor. Therefore, the Commission finds this suggestion to be unnecessary.

E. *Matchbook performance requirements.* Section 1202.6, as proposed, sets out several performance requirements dealing with delayed ignition and afterglow of bookmatches, separating splints, matchheads that fragment or fall off, and frictions that burn or produce fragments. This section, which appeared as § 1202.6 when proposed, has been moved up one section and will appear as § 1202.5 as issued below.

1. *Delayed ignition.* Section 1202.6(a)(1), as proposed, states as follows:

> A bookmatch is defective if it has, when tested in accordance with * * * (1) [d]elayed ignition exceeding 2 seconds.

A commenter wrote in support of the two second limitation, but stated that the standard made no mention of when the delay time was to begin. The commenter suggests that delayed ignition should be measured as the elapsed time between the first appearance of a glow in the matchhead and the development of a flame.

This commentor may be technically correct with his suggestion, however, in practicality it is extremely difficult to determine exactly when the ignition of a match begins without aid of a very expensive high speed motion analysis.

It is the Commission's opinion that the two-second period for delayed ignition is a reasonable time to detect matches exhibiting this defect whether the delay starts at the beginning of the striking motion or when the matchhead first begins to glow. Therefore, in order to simplify the timing procedure the Commission will measure the 2-second delay from the time the striking motion is initiated to the development of a visible flame. This clarification will be reflected in § 1202.6(d)(2)(i)(B) as issued below.

F. *Test procedures for general and performance requirements.* Section 1202.8, as proposed, sets out the test procedures to be used by the Commission to determine compliance with the standard. This section, which appeared as § 1202.8 when proposed, has been moved up two sections and will appear as § 1202.6 as issued below.

1. *General.* One commentor complained that the test procedures described in § 1202.8, as proposed, are not consistently reproducible, and are unnecessary, burdensome, and incomplete. Further, this commentor states that fragmentation, (which it believes to be the major single cause of match-related injuries) is only casually dealt with.

After reviewing the standard submitted by the offeror, the Commission determined that there were a number of inadequacies in the recommended standard. The major inadequacies in the test procedures were:

> Inadequately defined match striking test instrument.
> Improper conditioning requirements.
> Inadequate method of fragmentation detection.

These inadequacies were addressed in the Commission's proposal of April 1, 1976, in the following manner:

(a) The inadequately defined match striking test instrument was replaced with an easily repeatable hand striking procedure. The striking force prescribed in the proposed standard is based on striking tests with human subjects.

(b) The offeror's recommended conditioning procedures were changed to assure that the matches are adequately preconditioned in an oven and then exposed to an acceptable conditioning environment prior to testing.

(c) Test data developed by the Commission indicated that the fragmentation detection method proposed by the offeror was inadequate as a means of detecting matches which fragment. This method was only capable of detecting hot fragments which landed in a very small area under the matchbook. The method proposed by the Commission was designed to detect both hot and cold fragments regardless of the fragment trajectory.

Therefore, it is the opinion of the Commission that, contrary to those views expressed by this commentor, the test procedures in the proposed standard are both complete and necessary. Further, the Commission disagrees with the commentor's statement that fragmentation is only casually dealt with in the proposed standard. With the elimination of the burn control requirements, it should be noted that the primary emphasis of the test method is now on the detection of fragments and other performance malfunctions. Also, in light of other comments received on the proposed standard, certain of the procedures discussed below have been revised to be more efficient and still be consistent with the objectives of the tests.

2. *Preconditioning and conditioning.* Section 1202.8(b), as proposed, specifies the preconditioning and conditioning to which bookmatch samples must be subjected before being tested.

(a) One commentor complained of the extended time or lag period required to complete the testing provided in the proposed standard. The commentor noted that almost 75 percent of the testing lag period was taken up by the preconditioning and conditioning requirements of the proposed standard and stated that by cutting down this period of time the Commission could lessen the "unreasonable burdens" that these requirements place on the manufacturer.

The Commission notes that the conditioning times contained in the proposed standard were based upon specifying a single procedure for both performance testing and burn control testing. Conditioning for burn control requires a longer total time than for other performance requirements because a higher preconditioning temperature, which would be satisfactory for other requirements, could melt the paraffin on the bookmatch and thereby alter its burn time/burn distance characteristics. Since the burn control requirement is not being included in the Standard, the Commission is able to shorten the preconditioning and conditioning times to those required for the remaining performance tests and to reduce the lag time between the start of testing and final results.

Section 1202.8(b) (1) and (2) issued below as § 1202.6(b) (1) and (2), has been revised to reflect these shorter times. Specifically, the standard now requires that the matchbook be preconditioned for 45 minutes at 120° F followed by a minimum conditioning period of 15 minutes in the conditioning chamber or test room.

(b) Another commentor also raises the 3½ hour conditioning requirements for samples, claiming that it creates storage problems and unreasonable additional costs for handling. This commentor describes his previous experience of rapidly drying matches at 120° F in 10 to 15 minutes and then testing matches for all their functioning characteristics after a five minute cooling period and is concerned about the Commission's rejection of this shorter time interval.

The Commission's matchbook tests do not substantiate the 15-minute drying time for assembled matchbooks. Engineering data show that assembled matchbooks at 10 percent moisture by weight could not be dried in 10 to 15 minutes as recommended by the commentor or by ASTM in their recommended standard. The data also show that 45-minute drying time is required to precondition the complete matchbook from the 10 percent moisture condition. Test data indicate, however, that bookmatches tested without covers, with 10 percent moisture can be preconditioned within a 15-minute period at 120° F in a circulating air oven. Since the test procedures in the standard are based on testing the assembled matchbook, the longer preconditioning time is required.

(c) A third commentor recommends changing the upper humidity range specified in § 1202.8(b) (2), as proposed from 30 percent–50 percent to 30 percent–52 percent to be consistent with TAPPI (Technical Association of Pulp and Paper Industry) conditions.

The TAPPI conditions referred to are 50 percent ±2 percent relative humidity and appear in SATM D685–73 entitled, "Standard Method of Conditioning Paper and Paper Products for Testing." The Commission concurs with this recommendation and has made the change in § 1202.6(b) (2) issued below.

3. *Inspection for general requirements.* One commentor questions the need for the preconditioning and conditioning steps to be performed on matches prior to their being inspected for general requirements (§ 1202.8(c), as proposed).

The Commission did not intend to require that the matchbook be conditioned prior to inspection for general requirements, since matchbooks only need to be visually inspected for these requirements. As suggested by the commentor, the visual inspection could be performed prior to conditioning, thereby shortening the response time between testing and correction of a general requirement defect.

Therefore, the Commission is switching the order of §§ 1202.8(b) and (c), as proposed, so that as issued below the inspection requirement (§ 1202.6(b)) precedes the conditioning requirements (§ 1202.6(c)).

4. *Test device and fragment collection box.* Section 1202.8(d) (1) (i), as proposed, describes the devices to be used to test bookmatches for fragmentation.

Three persons made related comments on the proposed test device and collection box. Two of the three commentors addressed the need for a "human-engineered" test box. One stated that the proposed front hinged access door is cumbersome to handle and that it is impossible for an average-sized person to strike a match while at the same time observing the force gage in the box. Two of the three commentors also cited the need for a ventilated box in order to purge the test environment of combustion products from the match and to protect the operator from smoke and fumes. One of these further commented that the prolonged exposure to these gases would have a corrosive effect on the inner workings of the force gage test device.

The Commission concurs with the need for adequate ventilation and improved human engineering of the test box. The test box has been redesigned and the following design changes have been made:

Improved ventilation.

Force gage attachment altered from top to side.

Operator position moved from top to side to facilitate striking and viewing of force gage.

Size changed to decrease paper cost.

The redesigned box (see Figure 1 of the Standard) is well ventilated, to permit natural convection of exhaust fumes to the outside. Baffle plates cover the intake and exhaust holes to reduce the draft near the center of the box. The box can be opaque with the exception of a transparent viewing window for observing the striking of a match and for convenient viewing of the force gage dial. The force gage is suspended from the side, thus allowing clearance for inserting a full sheet of collection paper. The lower portion of the front is a door hinged at the base and contains a hand hole for striking the match. After striking the test match, the door is opened and the base can be slid out for examination of fragments. The base of the fragmentation test box is raised to support the 16 lb. bond paper. This permits transferring the paper to the lowered door during the fragmentation inspection period without having to touch or disturb the paper itself.

5. *Conditioning chamber.* Section 1202.8(d) (1) (iv), as proposed, describes the environmental conditions which must be maintained in the conditioning chamber used in the test procedure.

A commentor states that the requirements of the proposed standard place a humidity limitation on preconditioning and, therefore, both preconditioning and conditioning chambers will require humidity control. The commentor also states that the standard would require

separate preconditioning and conditioning chambers, each approximately 5'x5'x7' high in order to allow for reasonable storage and access to the materials being conditioned. The commentor's engineering department estimated that each chamber would cost about $10,000.

The commentor also points out that under "worst case" humidity conditions which may exist in the manufacturing plant the preconditioning temperature of 102° F might not adequately dry the matchbook. Although one way to avoid this problem is to place a humidity limitation on preconditioning, another method is to perform the preconditioning in a circulating air oven in a humidity controlled environment.

With deletion of the cover requirement to the burn time/distance requirement, the preconditioning and conditioning chamber requirements as specified in the proposed standard are no longer applicable. The preconditioning requirements have been changed to 45 minutes at 120° F in a circulating air oven and the conditioning requirements changed to 15 minutes at 70–77° F at 30–52 percent relative humidity. Under these conditions, humidity control would not be needed to achieve proper preconditioning.

The Commission, in responding to this comment, would like to point out that using a test room maintained at the prescribed conditioning environment would eliminate some of the problems associated with performance testing.

Commission data [2] show that the cost of such a test room would be significantly less than the $10,000 estimated by the commentor for conditioning chambers. The preconditioning circulating air oven would be contained in the test room and there would be no need for a time limit on how long a match or matchbook was exposed to the test room environment before conducting the performance tests.

The test room need not be larger than 10'x10'x8' to allow for freedom of movement for at least two testers. It must contain a hot air circulating oven, storage racks for samples to be tested, a table on which a collection box is placed and an area for afterglow testing. Afterglow testing can be done with the room lights out, within a darkened area of the room or in an opaque box with a viewing window. The Commission estimates that such a room could be erected in existing space and fully equipped for less than $5,000.

One or more smaller conditioning chambers may be used instead of a conditioning room. If the conditioning chamber(s) is used, the conditioned matchbooks must be tested within 10 minutes after removal from the conditioning chamber(s).

6. *Collection sheet.* Section 1202.8(d)(1)(v), as proposed, specifies that a 16 pound white bond paper be utilized to cover the base of the collection box so as to collect, for examination, the fragments which occur as a result of the testing.

A commentor states that white bond paper is not commercially available in a 2' x 2' size to fit the bottom of the proposed collection box. The closest available sizes to 2' x 2' are legal size at 8½" x 14" and a larger size at 24" x 38". If forced to use the larger size, the commentor estimates a yearly cost of $23,750 for test paper based on using 125,000 sheets per year (250 days×500 sheets per day) at a cost of $.037 per sheet, plus an estimated $.15 per sheet for cutting and fitting the paper to the collecting box size.

The Commission concurs that the paper requirement as proposed is a nonstandard size and consequently the cost may be higher than necessary. Therefore, the dimensions of the collection box as specified in § 1202.8(d)(1)(i), as proposed, was reduced in § 1202.6(d)(1)(i) as issued below to accommodate a sheet 12" x 19" which is one-fourth of a standard 24" x 38" mill size sheet.

Based on the cost data collected by the Commission [2] and using the 125,000 sheets per year estimated by the commentor, the Commission's estimate of cost is $1,762.50/year. By redesigning the size of the collection box, the Commission has eliminated the need for individual cutting and fitting of the collection paper and has thereby reduced the total cost to 1/13 of that estimated by the commentor. The above cost figure is dependent on the number of tests that need to be conducted and whether the paper is reused or not. This figure can be further reduced by buying in large quantities.

7. *Conditioned matchbook container.* Section 1202.8(d)(1)(vi), as proposed, specifies a desiccator containing anhydrous silica gel as a holding chamber for conditioned matchbooks awaiting testing.

One commentor points out that it is possible for matches stored in the conditioned matchbook container (dessicator) to be dried out below the acceptable test humidity and, therefore, a time limit should be placed on the use of the conditioned matchbook container. The commentor also points out that preconditioned matches could be stored in the conditioning chamber specified in § 1202.6(d)(1)(iv) below until they are needed for testing rather than in the conditioned matchbook container.

The Commission concurs with the commentor regarding the use of a conditioned matchbook container. Prolonged storage in a desiccator would dry the samples out and offers no control on the matchbook condition. It is the Commission's opinion that conditioned matches should not be stored in a desiccator and therefore, this provision has been eliminated from the final standard issued below, thereby allowing the storage of the matches in a conditioning chamber until needed for testing.

8. *Required strike force.* Section 1202.8(d)(2)(i), as proposed, sets out the striking force required in testing samples of matchbooks and bookmatches for the various performance defects listed in § 1202.5 issued below.

(a) One commentor undertook two experiments to determine if the 1.0–1.5 lbf striking force specified in proposed § 1202.8(d)(2)(i) was typical of the match-consuming public. The first experiment involved members of the commentor's quality control staff, while the second test involved persons who were not experienced match testers. The results of these experiments showed that many persons strike at a force level lower than that specified in the proposed Standard. This data leads the commentor to recommend that the minimum force should be lowered to 0.5 lb. making the total range 0.5 to 1.5 lbs. The Commentor points out that sensitive matches, which require less force to ignite, should not be penalized by requiring a typically high force: whereas, the harder striking match could still be subjected to the upper test range.

The values in the proposed standard are based on limited striking tests performed by the Commission. In order to evaluate this commentor's data, the Commission performed additional striking tests using males and females and both smokers and non-smokers.[2]

The striking test consisted of placing the matchbook on an instrumented load cell and recording the output. The subjects were told to strike the matches in their normal uninhibited manner.

The tests showed the average striking force of the subjects to be 0.83 lbf. The test data also show that at least 20 percent of the subjects struck with a force of 1.25 lbf or more, and 71 percent of them struck with less than 1.0 lbf. Therefore, in order to provide a margin of protection for those persons that strike with more than average force the Commission is of the opinion that the selected striking force of 1.0 to 1.50 lbf is an acceptable force range.

The Commission rejects the commentor's request to reduce the minimum striking force to 0.5 lbf. The data show that people tend to strike matches with a higher average force than this and also they tend to use similar force regardless of the matchbook sensitivity or manufacture. Since the Commission's data do not indicate that strikers differentiate between matches, allowing some manufacturers to test with a lower striking force could possibly allow potentially-dangerous matches to be certified.

(b) Another commentor stated that using the Commission's proposed procedure resulted in a striking force variation of between 1.05 and 1.9 lbf even though the intial pressure exerted on the striker strip is between 1–1.5 lbf. The commentor further stated that the procedures provide no means of controlling the pressure, velocity or acceleration while striking the match. Therefore, this commentor has recommended that the striking force and velocity should be accurately controlled and that instrumentation should be developed for this purpose.

Since the data referred to by the commentor was not included in the package reviewed, the Commission set up an independent testing program to assess the validity of this comment.

[2] Commission's Bureau of Engineering Sciences responses to public comments and evaluation of supportive test data, on file with and available through the Commission's Office of the Secretary, Washington, D.C. 20207.

Ten persons struck a total of 90 matches and the initial force and the force achieved during striking were recorded. The strikers were told to initially apply 1.0 lbf to the match. One out of the 90 strikes reached a value of 1.6 lbf. Three out of the 90 were 1.3 lbf, however, 86 (or 95 percent) of the strikes were between 0.95 and 1.25 lbf. Since matches which are initially subjected to the maximum 1.5 lbf could exceed the prescribed upper limit, the Commission has modified the striking procedures set out in proposed §§ 1202.8(d)(2)(i)(A) in 1202.6(d)(2)(i)(A) as issued below, to state that the initial force should be 1.0–1.1 lbf and that striking force should be maintained between 1.0–1.5 lbf during the striking motion. The previously specified range (1.0–1.5 lbf) remains the same, however, but the new procedures should reduce the possibility of exceeding the maximum striking force.

As to the second part of this comment, the Commission concedes that a match-striking instrument, if designed properly, could provide a uniform striking procedure. It should be pointed out that the offeror's recommended standard required a test instrument for match striking, however, no instrument had been designed nor specifications provided for building such a device. This provision was later changed by the offeror to allow a hand-striking procedure. It is the opinion of the Commission that the procedures as outlined in § 1202.6(d)(2)(i)(A) of the standard, which specify initial force and striking distance, provide reasonably consistent procedures for igniting matches so as to determine performance defects. It is not the intention of the Commission to inhibit or stifle progress in improving testing procedures. Therefore, if an instrument is developed which will give identical performance results and which will be compatible with the collection box and match striking parameters set in the Standard, the industry is free to utilize it, subject only to applicable certification requirements.

9. *Test procedures for afterglow.* Tests for afterglow under § 1202.8(d)(2)(ii), as proposed, were to be conducted in conjunction with the burn time/distance test. The afterglow time was to be determined by measuring the time from self-extinguishment of the visible flame until the disappearance of the visible afterglow.

One commentor objects to being required to use the same collection box for both fragmentation and afterglow testing as proposed in § 1202.8(d)(2)(ii). Since different "fixturing" (apparatus) and levels of illumination are required for each test, the commentor feels that a single box does not allow efficient bookmatch testing and, therefore, recommends using two separate test boxes.

Since the burn time/distance provision is not included in the standard as issued below, it is no longer required that afterglow testing be performed in a test box. Section 1202.6(d)(2)(ii)(A) as issued below, now requires that afterglow testing be performed within an area which can be darkened to 0.3 ft-candles. A vent or hood may be needed for this area.

Additionally, because the burn time/distance provision is not included in the final standard, the Commission has modified the test procedures so that the afterglow testing can be conducted with a non self-extinguishing match. During experimentation, the Commission staff observed that, after a match had burned for approximately ½ inch, the paraffin would be consumed and the splint would show visible signs of charring. Therefore, it was determined that a suitable test for afterglow would be to allow the match to burn for at least ½ inch and then to extinguish the match. The procedure for timing the afterglow would then be the same as in the proposed standard. These changes are reflected in § 1202.6(d)(2)(ii) as issued below.

10. *Report of test result.* Section 1202.8(e), as proposed, requires that a written report be kept recording all test results obtained and documenting that the bookmatches were tested in accordance with this section.

The Commission believes that this provision is unnecessary because of the Commission's intention to issue a certification rule for matchbooks which will include the necessary recordkeeping requirements.

11. *Miscellaneous*—(a) *Advance testing for cover/comb requirements.* One commentor was disturbed by the possibility of large quantities of noncomplying matchbooks being produced during the period between the completion of the manufacturing process and completion of testing. This commentor suggested that comb and/or cover tests could be conducted during the manufacturing process prior to their assembly into finished matchbooks.

In response to this the Commission first wants to point out that the elimination of the child-resistant cover requirements and the shortening of the preconditioning and conditioning times should greatly alleviate this commentor's concern.

With regards to the commentor's suggestion about the comb and/or cover tests, the Commission believes that in determining compliance with its product safety standards, it is generally considered better to sample and test finished products. Therefore, any compliance testing performed by the Commission on matchbooks will be performed on the finished, assembled matchbook according to the test methods outlined in the standard.

The certification rule, which will subsequently be proposed by the Commission for comment, will establish the parameters of a reasonable testing program. A manufacturer would be required to certify that his product complies with the standard, based on such a program. It may be that a reasonable testing program will include test procedures which are different from those set out in the standard, but the Commission will test for compliance by using the procedures in the standard. For example, a program could include "in process" testing procedures if they were found to be appropriate for the conditions. The manufacturer would design a testing program and perform whatever quality control testing was necessary to insure that the requirements of the standard are met.

(b) *Additional suggested requirements.* There are a number of comments which relate generally to matchbook safety but not directly to any of the requirements contained in the proposed Standard.

A number of persons comment that certain "design" type requirements should have been included in the Matchbook Standard. The comments addressed the following areas:

Minimum splint dimension or strength requirement.
Matchhead and friction requirements.
Uniform striking characteristics.

The commentors feel that such requirements would further enhance matchbook safety.

Three commentors specifically comment on match splint requirements as related to dropped matches. One states that, although it is primarily concerned with preventing injuries from fragmentation which causes in excess of 60 percent of all match-related injuries, it is also concerned with the strength of the match splint which it believes would significantly reduce the problem of dropped matches. Another commenter states that matches with stronger splints will not have to be held so close to the matchhead and, thus, will reduce the likelihood of fingers being burned and matches being dropped. Another commentor feels that the greatest hazard is that of the match stems used in some matches are being made from poor, flexible material that make it difficult to strike without getting burned.

On the matter of matchhead and friction requirements, one commentor feels that there should be specifications for raw materials, compositions, production methods, and drying techniques for both matchheads and friction.

Another commentor states that all matches should have uniform striking characteristics and this could be achieved by having standard formulas for head and friction compositions. This commentor's concern is that presently some matches are more sensitive (i.e., easier to light) than others, and a person not knowing the difference might use excessive pressure on a sensitive match, resulting in fragmentation of that match.

The Commission is limited by the Consumer Product Safety Act to issuing safety regulations which are reasonably necessary to prevent or reduce only those risks of injury associated with a consumer product that are found to be unreasonable. Although the Commission is aware of differences in match sensitivities, head hardness, splint strength and in the force required to ignite various matches, the Commission is unaware of any injury data or any other reasons which indicate that, except as they interface with those provisions of the standard issued below, the various ad-

ditional requirements suggested by these commentors are related to an unreasonable risk of injury associated with matchbooks.

Since the Commission can take action only where an unreasonable risk of injury associated with matchbooks is shown to exist and not when it is simply felt that a better or more efficient matchbook can be designed, it wishes to state that it appreciates the concern expressed by these commentors but is unable to act on any of these suggestions.

(c) *Availability of test equipment.* One commentor states that the proposed procedures involve test equipment not normally used in the industry and this poses additional problems to manufacturers.

The Commission concurs that some of the equipment in the proposed standard, such as the test device and collection box, is not normally used in the industry. However, as discussed above, since each manufacturer will develop its own reasonable testing program, use of these devices by the manufacturer is not mandatory. Notwithstanding this fact, these are relatively inexpensive items to purchase, and in the case of the collection box, to build. The most costly items will be the conditioning test room chamber and attendant conditioning equipment. Some items, however, such as the circulating air oven, timers, detection paper and even the test area, have been observed as part of existing facilities at some manufacturers.

V. MARKING

The marking and advertising provisions of § 1202.10 in the Commission's proposal deals with various requirements for identifying the manufacturer, limitation on the use of the matchbook cover as an advertising medium, and with the storage warning marking.

A. *Manufacturer's name and city.* One commentor urges the Commission to change its proposed requirement regarding identification by means of the manufacturer's name and city. He notes that for his firm, an important part of its total sales is in sales to jobbers (or private labelers as they are referred to in section 3 of the Act) who in turn sell the matchbooks. Such a private labeler places on the matchbook cover its name, city, and state for its own advertising purposes. The commentor contends that to require a product stocked and sold by a middleman to carry a manufacturer's name would be to compete directly with the jobbers business and its own use of advertising space. The commentor also states that the requirement is an infringement on the manufacturer's ability to sell its product and may substantially reduce its sales.

The Commission agrees that § 1202.10 (a), as proposed, is unfair to the manufacturer in the situation outlined by the commentor. Accordingly, revisions have been made to § 1202.8 as issued below which will allow for the use of a private labeler's name and city or its identifying symbol to appear on the matchbook in lieu of the manufacturer, provided that the private labeler can identify the manufacturer if requested to do so.

B. *Manufacturer's zip code.* Several commentors oppose the requirement for identification by zip code stating that it has no relevance to risk reduction, is not necessary for identification, and takes up space which is costly since it can otherwise be used for design and advertising purposes.

One commentor points out that, for its firm, one-time cost of approximately $75,000 would be required to make changes to existing artwork and printing plates. This cost would follow directly a $150,000 cost, recently absorbed, to make art and plate changes to accommodate reverse friction. Another respondent notes that a zip code necessitates a renovation of each plate from which the matchbook cover is printed at an estimated cost of $35 per plate per customer for his firm.

A third respondent points out that, because his firm has sales offices throughout the country, the requirement to print zip codes for each of these and to change codes when offices are relocated would impose unreasonable expense. He states that the firm has in excess of 10,000 active accounts, and estimates that the total cost of changing all its plates to accommodate the proposed zip code would exceed $400,000.

The Commission recognizes that several manufacturers and importers of matchbooks would have to remake all printing plates to comply with the proposed requirement for zip code identification since it cannot be added to existing plates. Although the Commission has not estimated the total number of plates affected, it has received estimates from manufacturers of more than 60 percent of the matchbooks manufactured in the United States placing the cost for conversion at between $35 and $47 per plate. The Commission has also estimated that substantial inventory losses would be incurred in scrapping all previously printed cover stock that did not include a zip code. The Commission has also been apprised that, with some exceptions, the Postal Service does not consider a zip code without a street address as a sufficient address. Further, the Commission is aware of the fact that most manufacturers maintain listings of the street address and telephone number in city directories.

The Commission has considered all these factors and has concluded that the costs associated with requiring a zip code identification are unreasonably high when compared to the marginal effect that inclusion of the proposed zip code requirement could have on protecting the public against unreasonable risks of injury associated with matchbooks. Accordingly, the zip code requirement has been deleted from § 1202.8 as issued below.

C. *Coupon advertising.* Section 1202.10 (b) and (c), as proposed, would prohibit the use of coupons printed on matchbook covers which require the cover, or any portion of it, to be torn off in order to take advantage of the coupon offer, unless the cover is designed so that the friction must also be removed with or so that the coupon contains a message instructing the user to discard the balance of the bookmatches.

Several commenters express concern about the economic burden of complying with the requirements on coupons, and point out that the additional costs are especially unnecessary because there is no identifiable link between the coupon restrictions and increased safety.

One commentor states that the proposed coupon requirements were unnecessarily restrictive because of the absence of any information linking a matchbook coupon with an injury or accident. The commentor feels that since the requirements are economically burdensome, restrictive, and without benefit to safety, they should not be included in the standard.

Another commentor points out that since 75 percent of his firm's general advertising sales, or a total of 37.5 percent of its total sales, are in coupon matchbooks, the proposed coupon requirements will cause a material reduction in revenues and will seriously affect the firm's profitability. He also states that considerable expense is involved in complying with the requirements since either changes in printing layout or a reduction in the space available for the coupon is required. He notes that coupon advertisers can hardly be expected to pay the same amount for less space, or for the same space, part of which has reduced visibility.

The Commission agrees that there is no evidence of injury sustained as a result of events linked with matchbook coupons. The Commission does, however, have documentation of a number of cases where injury was sustained when a bookmatch being ignited with the matchbook cover open, ignited the remaining bookmatches. The Commission therefore believes that injuries related to removing coupons from matchbooks could occur. After analyzing the estimated costs associated with the proposed coupon requirements and their potential differential impacts on the four manufacturers presently producing matchbooks with coupons, the Commission concludes that the additional cost burden cannot readily be justified nor supported on the basis of reducing risk of injury. The requirements relating to coupons have, therefore, been deleted from § 1202.8 as issued below.

D. *Storage warning.* Section 1202.10 (d), as proposed, sets out the requirement that any box or carton in which two or more caddies of matchbooks are shipped be marked, "For safety, store in a cool, dry place."

One commentor requests that the Commission change the wording of this proposed requirement to permit the use of the alternate wording being presently used by him, "store in a cool, dry place," until the dies used to manufacture the shipping containers come up for regular modification and remake. The commen-

tor points out that, although sufficient time is available in which to use existing container inventory and in which to remake all dies, an across-the-board change to all dies, most of which would otherwise not require modification at this time, would require an outlay by the firm of $2,000 in addition to administration costs involved. On the other hand, he states that a gradual change over several years would not add any additional costs to carton manufacturers and would still provide the existing message "store in a cool, dry place".

Although the Commission recognizes that the additional words, "For safety * * *" may appear to the commentor to be insignificant in light of the estimated costs for conversion, the language is intended to point up the importance of specifying that the storage instructions, to "store in a cool, dry place" are also directly related to the safety of the product, in that improper storage of matchbooks could cause changes in the properties of the bookmatch relating to their safety. Further, the Commission is of the opinion that the costs of providing the specific wording may be reduced if instead of a one-time, across-the-board remake of all dies, manufacturers use a combination of die changes at regular die-modification plus adhesive labels, rubber-stamped, or other means of adding the words "For safety."

VI. PROHIBITED STOCKPILING

The prohibited stockpiling provisions of § 1202.11 in the Commission's proposal specifies that manufacturers and importers shall not manufacture or import matchbooks that do not comply with the requirements of this Part 1202 at a rate greater than the rate of production of importation during the "base period" plus 15 percent of that rate between its date of issuance and its effective date.

Section 1202.11(c), as proposed, contained a provision requiring manufacturers and importers to maintain appropriate documentation to prove compliance with this section. Although not raised in the comments received, the Commission notes that no period of time was specified for which this documentation was to be maintained. In issuing its proposal of this section, the Commission assumed that the retention period for these records would be for a reasonable time. In retrospect, the Commission sees the practical need to set a time period and has selected six (6) months. Section 1202.9, as issued below, has been revised accordingly.

ECONOMIC CONSIDERATIONS

1. Several commentors express general doubt about the cost-effectiveness of the proposed standard for matchbooks and urge the Commission to consider fully the potential costs and benefits before reaching a final decision on a standard. One commentor urges the Commission to improve its cost analysis, to evaluate each component of the proposed standard in terms of cost-benefit or cost-effectiveness analysis, and to consider the impact of the proposed standard on the viability and competitiveness of the matchbook industry.

The requests made by these commentors parallel certain of the requirements of Section 9(c)(1) of the Act. This section requires that the Commission consider and make findings (which are to be included in the rule) with respect to (1) the probable effect of its rules upon the utility, cost, or availability of products subject to the consumer product safety rule, and (2) any means of achieving the objective of such a rule while minimizing adverse effects on competition or disruption or dislocation of manufacturing and other commercial practices consistent with the public health and safety. To support the findings required, the Commission (in its proposal of April 1, 1976) solicited comments, data, and information on the potential cost effects of the proposed standard and undertook special studies of the potential economic impact of the proposal, including those provisions being deleted from the final regulation. A chief purpose and result of these studies was to improve the Commission's cost data and analyses. The required findings and supporting information are set out and discussed in § 1202.2 issued below.

2. Two commentors state that, in proposing this standard, the Commission failed to comply with the requirements of Section 9(c) of the Act.

One contends that the proposed standard has been arbitrarily and unreasonably determined and is discriminatory. It further contends that there is no evidence that the Commission considered the probable effect of such rules upon the utility, cost or availability of such consumer products or, that the Commission even considered effects on competition or disruption or dislocation of manufacturers, and that the Commission certainly could not have considered the adverse effects of the proposed standard with respect to these factors.

A commentor notes that the Act requires that the Commission study alternative methods of reducing the identified risk and review the impact of these alternative methods on commercial practices and economics, and contends that the briefing package on the proposed standards and other staff materials failed to do this at all. The commentor states that the rationale accompanying the proposed standard does not contain any economic data relative to the cost of implementation or the effect in the marketplace, and objects because an economic analysis of the proposed standard, underway at the time of proposal, was not available for public comment prior to the end of the comment period.

Section 9(a)(2) of the Act (15 U.S.C. 2058 (a)(2)) requires the Commission to comply with 5 U.S.C. 553 (the Administrative Procedure Act) in issuing rules such as this, proposed under Section 7(f) of the Act. 5 U.S.C. 553(b)(3) requires an agency to publish in the FEDERAL REGISTER a general notice of proposed rulemaking setting forth "either the terms or substance of the proposed rule or a description of the subjects and issues involved."

Once a proposed rule is published for comment, 5 U.S.C. 553 requires agencies to allow the public to submit written data, views, or arguments on the proposal. In addition, Section 9(a)(2) the Act specifically requires the Commission to provide an opportunity for the oral presentation of data, views, or arguments. These requirements were fully complied with by the Commission.

The comment correctly points out that Section 9(c)(1) of the Act, as well as the legislative history of that section, requires the Commission, prior to promulgating a standard, to consider and make appropriate findings concerning certain of its economic effects for inclusion in the final standard. The legislative history of the Act, however, also indicated that to allow comments on the Commission's findings under Section 9(c)(1) would be unwise and unnecessary. As noted in the comments section of the Senate Commerce Committee Report:

> To require the Agency to announce its findings before receipt of comment on its specific proposal would seem both unwise—because they would not reflect the data and views submitted during that stage of the proceedings devoted to the solicitation and evaluation of comment upon the proposed standard—and unnecessary—since the findings in question are not intended as a basis for comment but as a way of insuring that the grounds for the ultimate decision are made a matter of record. (S. Rept. 740, 92d Cong. 2d Sess., p. 81 (1972)).

It is the Commission's view that all persons were afforded an adequate opportunity to present data, views or arguments concerning the proposed standard, including its economic impact. All such comments were considered by the Commission prior to issuing a final standard.

Moreover, research reports prepared for the Commission by Battelle Columbus Laboratories on the potential economic effects of the proposed standard, entitled "Analysis of the Bookmatch Industry and the Potential Impact of a Proposed Standard on Bookmatches: Phase I—Industry Information and Analysis" (March 18, 1975), and "Important Economic Issues Related to Matchbook Standard" (August, 1975), were included in the staff's briefing package to the Commission of November 17, 1975, were available for comment and were extensively commented upon in several responses to the proposal.

OTHER CONSIDERATIONS

I. INFORMATION AND EDUCATION PROGRAMS

Throughout the comments received, commentors question the extent of the Commission's efforts to deal with the unreasonable risks of injury associated with matchbooks through information and education programs.

At the present time, there are two major Commission information and education programs which address, among other things, the hazards of matchbooks.

The first of these programs is the Burn Injury Education Demonstration Project

which is a four-year program designed to test, in a scientific way, approaches to providing education on burn hazards and injuries. Injury data have been collected in a test and control site in the Boston, Massachusetts area. Three types of educational programs will be implemented at the test site, while the control site will receive no special treatment. Following the intervention stage (scheduled for FY '78), changes in knowledge and awareness levels of consumers in the test site will be compared with any change in the control site. In addition, reductions in injury rates in the test site will be compared with injury rates in the control site. The program itself will consist of educational materials, media materials and educational strategies aimed at school systems and the adult community. The hazards of matches as an ignition source will be one part of the program and will include such things as scald burns, general information regarding burn hazards, information on how to prevent burns from specific products, and proper treatment of burns.

The other program is the Flammable Products and Ignition Sources program which is a national information and education program focusing on the hazards associated with eight products within the Commission's jurisdiction. These products are: flammable liquids, matches, ovens, lighters, space heaters, flammable fabrics, extension cords, and fireplaces. The materials used in the program will consist of an activities guide for use in schools and organizations, as well as a catalogue of hazards to look for. These materials should be ready for public distribution in mid–1977. In addition, the Commission has prepared and distributed to more than 660 television stations, four TV spots on fire/burn hazards, one of which involved children playing with matches, and one which addressed the hazard of cigarette ignition of upholstered furniture.

The Commission views the education about fires and burns to be a high priority, and has expended more than $700,000 over the past two years for the development, testing, printing, and dissemination of information and education materials on these subjects.

II. ENVIRONMENTAL EFFECTS

Prior to publishing the proposed standard on April 1, 1976, the Commission considered the environmental effects of its action and determined that, with the possible exception of the burn time/distance provision, the proposed standard would not cause significant effects on the environment. The factors leading to the original determination were set forth in an environmental assessment of the proposed standard which is on file with and available from the Commission's Office of the Secretary.

With the deletion of the burn time/distance provision by the Commission from the final Matchbook Standard issued below, the Commission now concludes that the final standard will have no significant effects on the environment and that no environmental impact statement is necessary.

III. ADVERSE AFFECT ON THE ELDERLY AND HANDICAPPED

Section 9(b) of the Act as amended, requires the Commission to consider and take into account the special needs of elderly and handicapped persons to determine the extent to which such persons may be adversely affected by Part 1202 as issued below.

After review of all the materials in the public record for this proceeding, the Commission anticipates no increased risk of injury to the elderly or handicapped by use of a complying matchbook nor increased inconvenience to these persons. Therefore, the Commission finds that the special needs of the elderly or handicapped will not be adversely affected by the issuance below of Part 1202.

IV. REQUIRED SECTION 9(C) FINDINGS

Section 9(c) of the Act (15 U.S.C. 2058(c)) requires that prior to promulgating a consumer product safety rule the Commission shall consider and shall make appropriate findings for inclusion in the rule as to: (1) The degree and nature of the risk of injury the rule is designed to eliminate or reduce; (2) the approximate number of consumer products, or types or classes thereof, subject to the rule; (3) the need of the public for the consumer products subject to the rule, and the probable effect of the rule upon the utility, cost or availability of such products to meet that need; (4) any means of achieving the objective of the rule while minimizing adverse effects on competition or disruption or dislocation of manufacturing and other commercial practices consistent with the public health and safety; (5) the necessity of the rule to eliminate or reduce an unreasonable risk associated with such product; and (6) the fact that the promulgation of the rule is in the public interest.

The findings required by Section 9(c) have been made by the Commission and are contained in § 1202.2 below.

CONCLUSION AND PROMULGATION

Having considered the offeror's submission, the published proposal, the oral and written responses to the proposal, and other relevant material, the Commission issues the safety standard for matchbooks as set forth below.

Therefore, pursuant to provisions of the Consumer Product Safety Act (Sec. 9(a), Pub. L. 92–573, 86 Stat. 1215; 15 U.S.C. 2058(a)), a new Part 1202 is added to Title 16 Chapter II, Subchapter 13, as follows:

Subpart A—The Standard

Sec.
1202.1 Scope and effective date.
1202.2 Findings.
1202.3 Definitions.
1202.4 Matchbook general requirements.
1202.5 Matchbook performance requirements.
1202.6 Test procedures for general and performance requirements.
1202.7 Certification.
1202.8 Marking.
1202.9 Prohibited stockpiling.

AUTHORITY: Secs. 2, 3, 7, 9, 14, 16, and 19, Pub. L. 92–573, 86 Stat. 1212–17; 15 U.S.C. 2051, 2052, 2056, 2058, 2063, 2065, and 2068.

§ 1202.1 Scope and effective date.

(a) *Scope.* This Part 1202, a consumer product safety standard, prescribes the safety requirements, including labeling and performance requirements, for the matchbook. This Part 1202 applies to all matchbooks manufactured in or imported into the United States after its effective date.

(b) *Effective date.* The effective date shall be May 4, 1978.

§ 1202.2 Findings.

(a) *Risk of injury.* The Commission finds that unreasonable risks of injury from accidents are associated with matchbooks. These unreasonable risks, which this Part 1202 is intended to reduce or eliminate, are:

(1) Burn injuries, sustained by children and others, including mentally or physically impaired persons, who play with or otherwise improperly use bookmatches.

(2) Burn injuries sustained by persons who use bookmatches that fragment or have delayed ignition.

(3) Eye injuries sustained by persons who use bookmatches that fragment and cause particles from such matches to lodge in a person's eye.

(4) Burn injuries sustained by persons who use bookmatches that, when struck, ignite the remaining matches in the matchbook.

(5) Burn injuries sustained by persons from fires that have resulted from unexpected ignition of bookmatches with no deliberate action by the user.

(6) Burn injuries that have been sustained by persons from fires that have been set by the afterglow of extinguished bookmatches.

(b) *Products subject to this standard.* (1) The products subject to this standard are those kinds of manufactured ignition devices known as matchbooks. The matchbook consists of a group of bookmatches joined together and fastened within a cover. Although matchbooks are commonly referred to as paper matches or paper-stem matches to distinguish them from individual stick matches such as wooden stem matches packaged in boxes, all matchbooks, regardless of the materials of manufacture of the covers or of the bookmatches fastened within, are subject to this Standard.

(2) Matchbooks subject to this standard can be divided into two basic categories: Resale matchbooks and special reproduction matchbooks. Resale matchbooks can be subdivided into advertising and non-advertising matchbooks. Non-advertising matchbooks are generally sold by large chain stores, and constitute a small portion of the total resale matchbook volume. Resale matchbooks with advertising are generally given away by tobacco shops, drug stores, vending firms and other mass distribution outlets. Spe-

cial reproduction matchbooks, characterized by their distinctive and unique cover designs, are purchased and distributed for promotional purposes by hotels, restaurants, financial institutions and other business enterprises, and are given free to users.

(3) The Commission estimates that resale matchbooks accounted for almost 75 percent of the volume of matchbooks in 1975, or about 15 billion matchbooks, while special reproduction matchbooks accounted for just over 25 percent, or about 5.5 billion matchbooks.

(c) *Effects on utility, cost, and availability.* (1) The Commission finds that the public need for ignition devices which are small, portable, and can be used to provide a source of fire, is substantial since such products meet basic requirements for a source of fire to ignite tobacco products, fires, candles or other products, and are also used for miscellaneous other purposes such as providing short term illumination. Three types of products: matchbooks, individual stick matches, and lighters, predominately supply the source of fire to meet these requirements.

(i) The Commission estimates that in 1976 U.S. consumers required approximately 645 billion such fire sources or "lights," as they are known, with almost 98 percent of this total required for tobacco products. In the aggregate, the requirements by U.S. consumers for a source of fire has been growing at an annual rate of approximately 3 percent. Matchbooks, the products regulated in this standard, are estimated to have supplied about 65 percent of the source of lights, lighters accounted for about 25 percent, and individual stick matches (primarily wooden-stem type) accounted for the remainder.

(ii) The Commission also finds that matchbooks fulfill a need by institutions and business enterprises for a particular form of specialty advertising that is both relatively inexpensive and effective in reaching a specified audience or population segment with the advertiser's message. Various studies of matchbooks as a form of advertising have found that readership can average 3 to 15 times higher than average readership, listenership, and viewership figures from competing media such as magazines, newspapers, radio, and television, and that readership retention of the matchbook advertising message was extremely high, about 45 percent. In addition, matchbooks tend to be considerably less expensive than other forms of specialty advertising, including those competing advertising items such as address books, key cases, litterbags and the like, which are themselves relatively inexpensive.

(2) The Commission finds that the standard will have no adverse effects on the utility that consumers derive from matchbooks. To the extent that injuries and property damage associated with the use of matchbooks is reduced or eliminated as a result of this standard, the utility of matchbooks as a source of fire will be increased.

(3) The Commission estimates that manufacturing cost increases as a direct or indirect effect of this standard will be modest for the industry as a whole. Such increases will tend to be concentrated in one-time costs to complete change-over to reverse friction, and in costs to establish and implement testing programs and certification procedures.

(i) Because some 80–90 percent of the matchbooks produced annually are given free to consumers, there is not likely to be any direct cost impact on the consumer as a result of the standard. Some proportion of increased manufacturing costs will be passed on to the institutions and business enterprises that purchase matchbooks for promotional purposes. To the extent that increases in advertising and promotional costs may be reflected in higher prices for goods and services sold by these businesses, there may be indirect cost effects on consumers. If so, such impacts would likely be small, if not imperceptible.

(ii) For the 10–20 percent of matchbooks that are purchased at retail by consumers, some proportion of any manufacturing cost increases may be passed on to the consumer. A resulting increase in retail prices for such matchbooks will be small, no more than a few cents per box of 50 matchbooks.

(4) The Commission finds that the standard will not have impacts of significant magnitude on the availability of matchbooks. Although some institutions and business enterprises may reduce their matchbooks purchases or eliminate them in response to any increased price of matchbooks, the large number of such purchasers, and the large volume purchased annually, are such that curtailment of purchases by some businesses is likely to have very small effects on the total number of matchbooks available to U.S. consumers.

(d) *Alternatives.* (1) The Commission has considered other means of achieving the objective of the standard throughout the course of its development. Certain other more elaborate test requirements were considered and were shown to have the potential for severe adverse effects on competition and estimated to result in disruptions and dislocations of manufacturing and commercial practices. Therefore, having considered and rejected such other means of achieving the objective of the standard, the Commission has found none that would cause less disruption or dislocation of manufacturing and other commercial practices, consistent with the public health and safety than this standard.

(2) Because of competition from substitute products such as inexpensive disposable butane lighters and because of other prevailing business and economic conditions, the industry manufacturing matchbooks has been in a state of contraction in recent years. This contraction, marked by the exit of some firms and by plant closings or consolidations, is likely to continue in the future; but this will neither be the result of, nor significantly accelerated by, effects of the standard. Currently, aggressive price and service competition prevails among firms vying for customer accounts. It is anticipated that this competition for sales may increase as an indirect effect of the standard. To the extent that this occurs, there may be some disruption or dislocation of manufacturing, sales, or distribution practices in certain matchbook product categories and market segments. Marginal firms and firms producing limited product categories or for limited market segments may be affected to a greater degree than multi-product category or multi-market firms.

(e) *Conclusion.* The Commission finds that this standard, including its effective date, is reasonably necessary to eliminate or reduce the unreasonable risks of injury associated with matchbooks and that the issuance of the standard is in the public interest.

§ 1202.3 Definitions.

In addition to the definitions given in Section 3 of the Consumer Product Safety Act (15 U.S.C. 2052), the following definitions apply for the purpose of this standard.

(a) "Afterglow" means a visible glow in the splint after all the visible flame has been extinguished.

(b) "Bookmatch" means a single splint, with a matchhead attached, that comes from a matchbook.

(c) "Bridge" means the matchhead material held in common by two or more splints.

(d) "Broken bridge" means a bridge that has become separated.

(e) "Caddy" means a package of 2 or more matchbooks wrapped or boxed together at a production plant.

(f) "Comb" means a piece of wood, paper, or other suitable material that has been formed into splints, that remain joined at their base, and that are designed to have matchheads attached to their tips.

(g) "Cover" means the paperboard or other suitable material that is wrapped around and fastened to the comb(s).

(h) "Fragments" means particles of the matchhead or friction material that results from the ignition of a bookmatch on the friction surface and that measure more than 1.0 mm (.039 inch) in the maximum dimension or particles that leave scorch or burn marks on the detection paper when tested in accordance with § 1202.6.

(i) "Friction" means the dried chemical mixture on the matchbook cover used to ignite the bookmatch.

(j) "Match" means a single splint with matchhead attached.

(k) "Matchbook" means one or more combs with matchheads attached and a cover that is wrapped around and fastened to those combs.

(l) "Matchhead" means the dried chemical mixture on the end of a splint.

(m) "Splint" means the support for the matchhead or that portion normally held when using the bookmatch.

§ 1202.4 Matchbook general requirements.

A matchbook shall meet the following general requirements and shall be tested for these requirements as prescribed in § 1202.6(b):

(a) The friction shall be located on the outside back cover near the bottom of the matchbook.

(b) The cover shall remain closed without external force.

(c) No friction material shall be located on the inside of the cover where possible contact with the matchheads may occur during ordinary use.

(d) There shall be no bridge(s) or broken bridge(s).

(e) No matchhead in the matchbook shall be split, chipped, cracked, or crumbled.

(f) No portion of any matchhead shall be outside the matchbook cover when the cover is closed.

(g) No part of a staple or other assembly device for securing the cover and combs shall be within or touching the friction area.

(h) A staple used as an assembly device for securing the cover and combs shall be fully clinched so that the ends are flattened or turned into the cover.

§ 1202.5 Matchbook performance requirements.

A matchbook is defective and therefore does not meet the requirements of this standard if it has, when tested in accordance with § 1202.6, any of the following performance defects:

(a) Delayed ignition exceeding 2 seconds.

(b) A splint that separates into two or more pieces.

(c) A matchhead that produces fragments as defined in § 1202.3(h).

(d) A matchhead that falls off.

(e) Friction that burns or produces fragments as defined in § 1202.3(h).

(f) Afterglow exceeding 5 seconds or the reappearance of a visible flame after the first extinction of the original flame.

§ 1202.6 Test procedures for general and performance requirements.

(a) *Safety precautions.* (1) When striking the bookmatch, keep the matchbook cover closed to avoid possible ignition of the remaining test bookmatches. Perform test bookmatch ignitions in the collection box with the matchbook affixed in its holder. (See Figure 1 and § 1202.6(d)(1)(i)).

(2) After performance testing, place the used bookmatches in a disposal container. Safety glasses should be worn by the tester.

(b) *Inspection for general requirements.* Inspect the matchbooks under test for the general requirements listed in § 1202.4.

(c) *Conditioning.* (1) Before testing for performance requirements, precondition the specimen matchbooks at 49° ±2° C (120°±3.6° F) for 45 minutes in the circulating air oven in a manner that will permit free circulation of air through the combs of the matchbooks to be conditioned. Open the matchbook covers, separate each comb so that the matchheads have a minimum separation of 1.6 mm ($\frac{1}{16}$ in) and place the matchbooks in the oven so that air flow through the combs is allowed.

(2) After preconditioning and prior to testing, place the specimens in a conditioning room or chamber for a period of not less than 15 minutes at 23±2° C (73.4±3.6° F) and at a relative humidity within the range of 30–52 percent.

(3) Samples shall be tested within 10 minutes of removing from the conditioning chamber. If testing is to be performed in a conditioned room, as defined in § 1202.6(d)(1)(iv), the 10 minute time limitation does not apply.

(d) *Test for performance requirements.* These methods will test for the performance defects stated in § 1202.5:

(1) *Apparatus and materials*—(i) *Test device and fragment collection box.* A device shall be provided that is capable of indicating a force and of holding the matchbook above the base of the collection box. The device shall hold the matchbook with the long dimension of the friction in a vertical position to permit ignition of the bookmatch by striking in a path perpendicular to the base. The friction surface of the matchbook shall be perpendicular to the collection box front panel. The device shall be contained in a collection box with interior dimensions of 48.3 cm x 30.5 cm x 61 cm (19 in L x 12 in W x 24 in H±.4 in). (See Figure 1). This box is for the purpose of collecting fragmentation debris. The matchbook shall be centered between the four vertical sides of the box with the top of the matchbook 28.6±1 cm (11.3±.4 in) above the collection base. The collection box shall have a hinged access panel on the front vertical face to permit access to the collecting paper. The access panel shall have a handhole no larger than 12.7 cm x 12.7 cm (5 in x 5 in) to facilitate striking of matches. The side of the box toward the operator should be transparent to observe the loading and striking of the match.

(ii) *Fragment measuring instrument.* A device, such as an optical comparator with reticle, that is capable of measuring particle size of 1.0±.05 mm (0.039±0.002 in) shall be used.

(iii) *Preconditioning chamber.* A circulating air oven of adequate size to precondition the specimen matchbooks at 49°±2° C (120±3.6° F) shall be used.

(iv) *Conditioning room or chamber.* A conditioning room or chamber that can be controlled to a temperature of 23.0°± 2.0° C (73.4°±3.6° F) and a relative humidity within the range of 30–52 percent shall be used.

(v) *Collection sheet.* The fragment collection sheet of 7.26 kg (16 lb) white bond paper is placed on the base of the collection box and may be removed for examination for fragments and scorch marks.

(vi) *Timer.* A timing device with an accuracy of ±0.2 second shall be used.

(2) (i) *Procedures.* (A) Position the fragment collection sheet in the collection box on the base panel. Attach the force measuring and matchbook holding fixture within the box so that the matchbook friction surface is centered within 2.5 cm (1 in) of the four vertical sides of the box. Remove one randomly selected bookmatch from the matchbook. Place the matchbook in the holding fixture with the plane of the friction surface perpendicular to the collection sheet and the friction surface oriented for a vertical striking mode. Hold the splint's wide surface parallel to the striking direction and perpendicular to the friction surface. Press the matchhead against the strip 6.4 mm ($\frac{1}{4}$ in) from the top of the friction pad with an initial force of 4.5–0+.04 N (1.0–0+.1 lbf). Strike the match with a rapid downward motion. The contact between the matchhead and the friction should be maintained for at least a distance of 1.3 cm (0.5 in), but should not exceed 3.8 cm (1.5 in) during the striking motion (see Figure 2). The striking force must not exceed 6.7 N (1.5 lbf) during the striking motion. The striking stroke should be terminated within 7.6 cm (3 in) after leaving the bottom edge of the friction.

(B) Strike the matchbook as in paragraph (d)(2)(i)(A) of this section and measure the time lapsed from the start of the striking motion to the appearance of a visible flame. Note any delayed ignition exceeding two seconds. Observe and note if the performance defect in § 1202.5(b) occurred.

(C) After the bookmatch has been struck, observe any burning of the friction and measure any debris on the collection sheet for fragments and note the presence of any scorch marks on the collection sheet.

(ii) *Afterglow test.* (A) Assure that the illumination in the area where the match is being struck does not exceed 0.3 ft-candles. Hold the bookmatch hozizontally in a clamping device with the wide dimension of the bookmatch in a vertical position. The clamping device shall be at least 1.3 cm (0.5 in) from the bottom of the matchhead. Ignite the test bookmatch and allow it to burn until the flame is extinguished. Measure the elapsed time from extinguishment until all afterglow disappears. Disregard any afterglow under the head. Observe and note any afterglow exceeding five seconds or any reappearance of a visible flame after first extinction of the visible flame.

(B) Observe and note if the performance defect in § 1202.5(d) occurred.

§ 1202.7 Certification.

Certification shall be in accordance with section 14(a)(1) of the Consumer Product Safety Act (15 U.S.C. 2063(a)(1)) and regulations issued under section 14.

§ 1202.8 Marking.

(a) The manufacturer's or private labeler's name and city or a symbol which will identify the name and city shall appear on the matchbook. In addition, every private labeler must label the matchbook with a code which enables it to identify, if requested, the manufacturer of the product.

(b) Boxes or cartons in which two or more caddies are shipped shall be marked "For safety, store in a cool, dry place."

§ 1202.9 Prohibited stockpiling.

Section 9(d)(2) of the CPSA authorizes the Commission to prohibit manufacturers and importers from stockpiling a product subject to a consumer product safety standard between its date of issuance and its effective date. A manufacturer or importer is in violation of § 9(d)(2) of the CPSA and of this § 1202.9 if it fails to comply with the following:

(a) *Definitions.* (1) "Base period" means, at the option of the manufacturer or importer concerned, any period of 365 consecutive days beginning on or after January 1, 1973, and ending on or before December 31, 1975.

(2) "Rate of production (or importation)" means the total number of matchbooks manufactured (or imported) during a stated time period. In determining whether a matchbook was manufactured during a stated time period, the date on which the cover and combs were assembled to form a matchbook shall be used. In the event that a manufacturer currently operates a matchbook manufacturing plant that it did not operate during the base period, or that it did not operate for an entire base period, that manufacturer shall use, as the rate of production during the base period for that plant, either (i) the average daily rate of production (including nonproduction days such as Sundays, holidays, and vacations) for the part of the base period he did operate that plant, multiplied by 365 or (ii) the rate of production during the base period of his most nearly similar matchbook manufacturing plant.

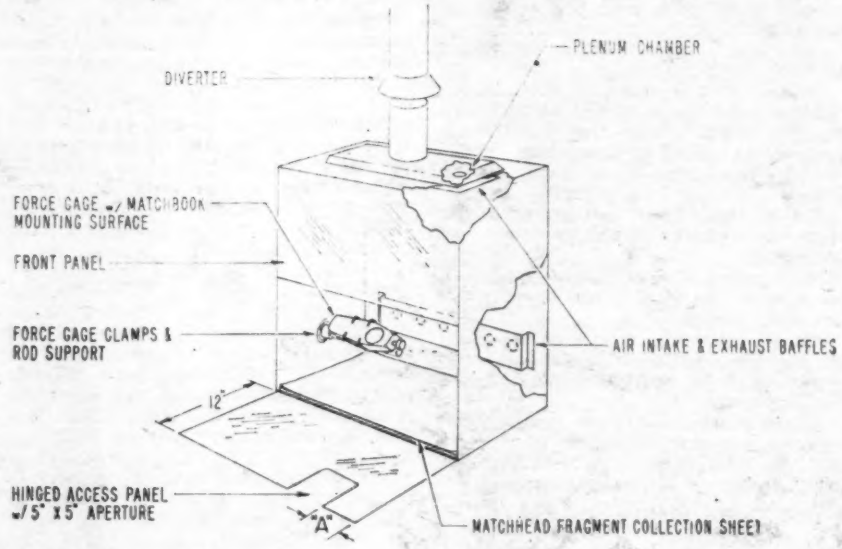
(b) *Prohibited act.* Manufacturers and importers of matchbooks, as these products are defined in § 1202.3(k), shall not manufacture or import matchbooks that do not comply with the requirements of this Part 1202 between the date that this Part 1202 is issued and the date that it becomes effective at a rate that is greater than the rate of production or importation during the base period plus 15 percent of that rate.

(c) *Documentation.* Manufacturers and importers shall maintain, for a period of six (6) months after the effective date specified in § 1202.1(b), appropriate documentation to be able to substantiate to the Commission that they are in compliance with the provisions of this section.

(Sec. 9(a), Pub. L. 92-573, 86 Stat. 1215; 15 U.S.C. 2058(a).)

Dated: April 28, 1977.

SADYE E. DUNN,
Secretary, Consumer Product Safety Commission.



"A"-Optional

FIG 1—MATCHBOOK DATA COLLECTION BOX (12"x19"x24"h) ASSY

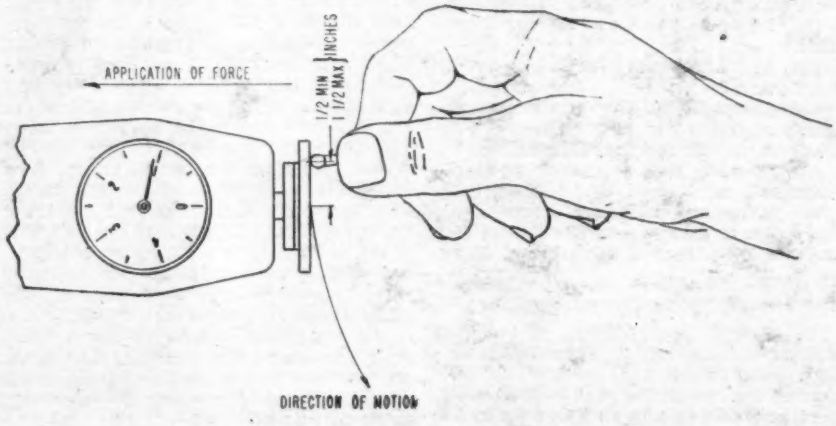


FIG 2-STRIKING MODE FOR PERFORMANCE TESTS

[FR Doc.77-12618 Filed 5-3-77;8:45 am]